



Project name: Red Line Westlake Rail
Wayside Energy Storage System

Transit agency: Los Angeles County
Metropolitan Transportation Authority
(LACMTA)

Location: Los Angeles, California

TIGGER goal: Energy reduction

FTA region number: IX

Award amount: \$4,466,000

Congressional district: CA-31

Funding mechanism:
Recovery Act (ARRA)

LACMTA Captures Lost Energy with Flywheel Wayside Rail Energy Storage

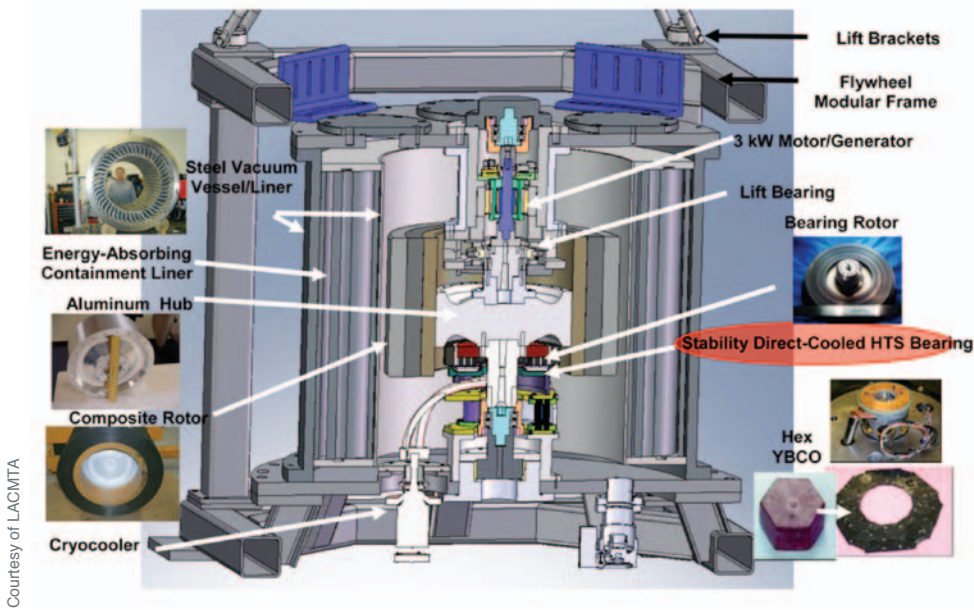
Thanks to funding from the TIGGER Program, a new energy-saving rail technology will make its debut at the Metro Red Line, a heavy-duty transit line run by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The innovative flywheel-based technology—Wayside Energy Storage Substation (WESS)—will capture the energy normally lost when a train slows or stops at the station.

How does it work? WESS technology uses a flywheel to capture and store the energy that is usually lost to resistors or friction when a train decelerates, and then transfers that energy to a train as it starts or accelerates.

The 2 MW WESS at the Metro Red Line will generate the most energy when rail traffic is at its peak, which is often when the fluctuating cost of electricity is at its highest. Based on the line's current level of service (an average of 160 departures a day), the anticipated



The Los Angeles County Metropolitan Transportation Authority is the county-chartered, regional transportation planning and public transportation agency for Los Angeles County. More than 9.6 million people—one third of California's residents—live, work, and play within LACMTA's 1,400 square-mile service area. LACMTA's metro bus fleet of more than 2,000 vehicles transported 366 million passengers in 2010. Its metro rail system, which features more than 70 miles of track and 65 passenger stations along five service lines, transported an average of 300,000 passengers on weekdays in 2010.



The flywheel technology shown here is a mechanical device that converts kinetic energy into electrical energy and vice versa.

Impact:

A significant portion of LACMTA's electricity use goes to power the rail system. The WESS project will lower energy use and help reduce costs.

savings are substantial—more than 400 MWh a year.

This recuperation of energy will decrease the amount of electricity that LACMTA purchases from the grid, thus reducing associated greenhouse gas emissions. Reducing emissions is particularly important for LACMTA, because it is located in a non-attainment zone for air quality (i.e., air pollution levels persistently

exceed national air quality standards).

In addition to saving energy and reducing emissions, the installation will augment the capacity of LACMTA's traction power system.

While flywheel technology has been demonstrated in other high cycling, heavy-duty applications, this marks its first use in the transit industry in the United States. A successful demonstration at LACMTA will expand the technology's marketplace potential and help create American jobs.

About TIGGER

The Transit Investment for Greenhouse Gas and Energy Reduction (TIGGER) Program was established in 2009 by the U.S. Department of Transportation's Federal Transit Administration (FTA). Designed to reduce energy use and greenhouse gas emissions in transit agencies around the country, the TIGGER Program made funds available for capital investments that would reduce greenhouse gas emissions or lower the energy use of public transportation systems. An initial \$100 million in American Recovery and Reinvestment Act grants funded 43 competitively-selected transit projects. In 2010, the FTA provided an additional \$75 million in grants to fund 27 new TIGGER projects. These 70 projects are employing a variety of technologies to meet the program goals, including solar installations, building efficiency improvements, wind technology, wayside energy storage for rail, and purchase of more efficient buses. In fiscal year 2011, FTA provided an additional \$49.9 million to continue the program.



For More Information

LACMTA:
www.metro.net

FTA TIGGER:
www.fta.dot.gov/TIGGER